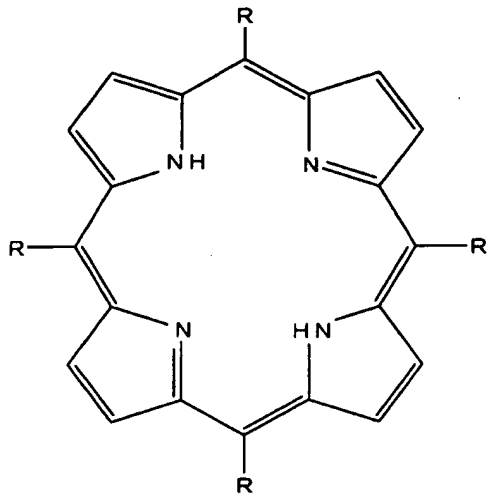
CLAIMS

1. An optical recording disk comprising a recording layer containing an organic compound as a primary component, the organic compound containing a porphyrin system dye represented by general formula (1) as a primary component.



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2. The optical recording disk in accordance with Claim 1 which comprises at least a recording layer containing the organic compound containing the porphyrin system dye as a primary component and a light transmission layer which transmits a laser beam having a wavelength of 390 to 420 nm on a support substrate in this order, the porphyrin system dye having a minimal value n_{min} of a refractive index (real part of complex refractive index) n within a wavelength region of 390 nm to 420 nm and a refractive index n equal to or lower than 1.2 with respect to the laser beam having the wavelength of 390 to 420 nm and absorbing the laser beam having the wavelength of 390 to 420 nm to be melted or decomposed, whereby the refractive index thereof changes and data are recorded in the optical recording disk.

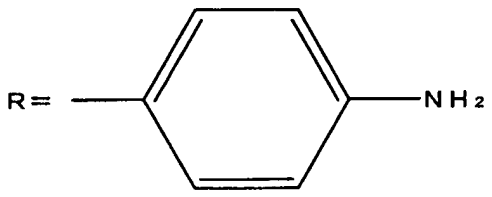
3. The optical recording disk in accordance with Claim 1, wherein the porphyrin system dye is melted or decomposed by the laser beam, whereby the refractive index *n* thereof increases.

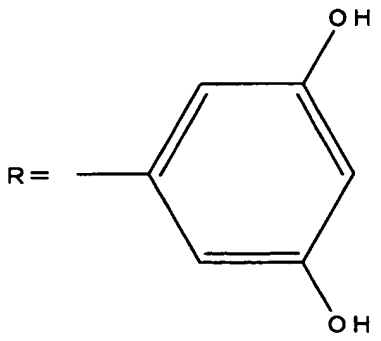
4. The optical recording disk in accordance with Claim 2, wherein the porphyrin system dye is melted or decomposed by the laser beam, whereby the refractive index *n* thereof increases.

5. The optical recording disk in accordance with Claim 1, wherein an extinction coefficient (imaginary part of the complex refractive index) k of the porphyrin system dye is equal to or higher than 1.5 at wavelengths of a laser beam for reproducing data and a laser bream for recording data.

6. The optical recording disk in accordance with Claim 2, wherein an extinction coefficient (imaginary part of the complex refractive index) k of the porphyrin system dye is equal to or higher than 1.5 at wavelengths of a laser beam for reproducing data and a laser bream for recording data.

7. The optical recording disk in accordance with Claim 1, wherein R in the general formula (1), at each occurrence, is independently selected from the group consisting of





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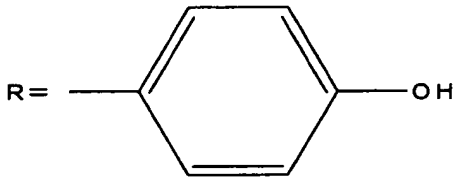

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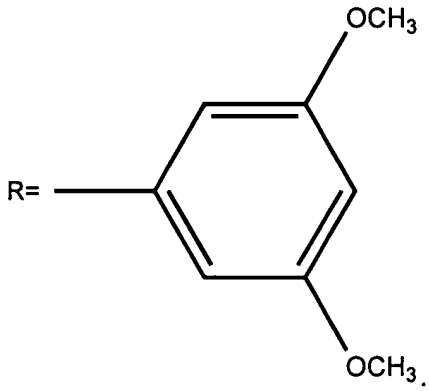

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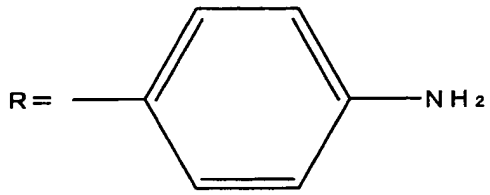
8. The optical recording disk in accordance with Claim 2, wherein R in the general formula (1), at each occurrence, is independently selected from the group consisting of



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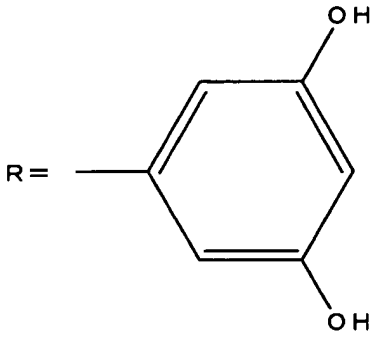

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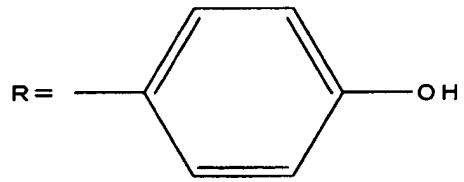

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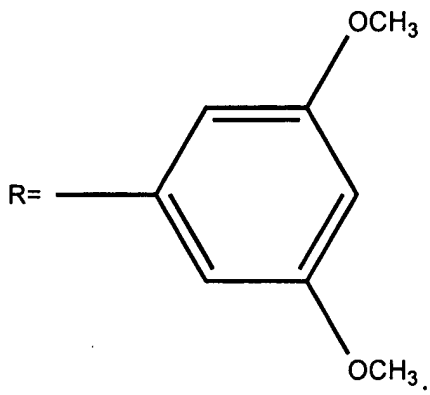

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9. The optical recording disk in accordance with Claim 1, wherein the recording layer further contains a ketone system solvent whose carbon number is 5 to 7.

10. The optical recording disk in accordance with Claim 2, wherein the recording layer further contains a ketone system solvent whose carbon number is 5 to 7.

11. The optical recording disk in accordance with Claim 9, wherein the recording layer contains a ketone system solvent whose carbon number is 6.

12. The optical recording disk in accordance with Claim 10, wherein the recording layer contains a ketone system solvent whose carbon number is 6.

13. The optical recording disk in accordance with Claim 2, wherein the support substrate is formed of a polyolefin resin.

14. The optical recording disk in accordance with Claim 2 which further includes a thin film formed of a metal and/or a dielectric material on the support substrate.

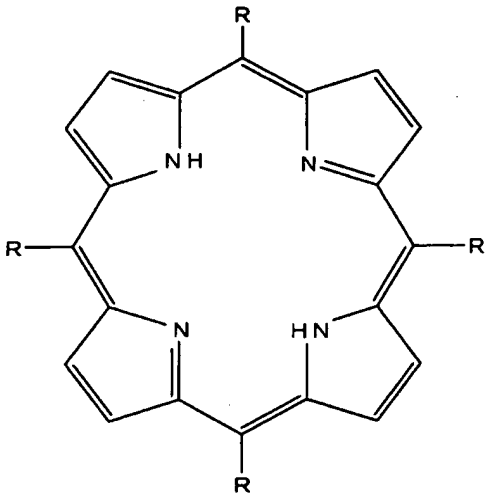
15. The optical recording disk in accordance with Claim 2 which further includes a dielectric film whose refractive index (real part of complex refractive index) n equal to or higher than 1.8 on the support substrate.

16. The optical recording disk in accordance with Claim 1, wherein the recording layer further contains a quencher.

17. The optical recording disk in accordance with Claim 2, wherein the recording layer

further contains a quencher.

18. A method for manufacturing an optical recording disk comprising steps of dissolving a porphyrin system dye represented by general formula (1) into a ketone whose carbon number is 5 to 7 to prepare a coating solution, and applying the thus prepared coating solution onto a support substrate using a spin coating process to form a recording layer.



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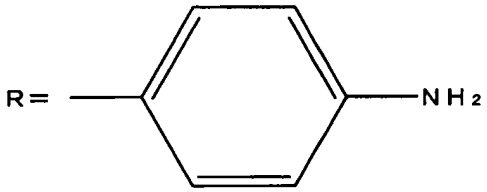
19. A method for manufacturing an optical recording disk in accordance with Claim 18 which comprises steps of dissolving the porphyrin system dye having a minimal value n_{min} of a refractive index (real part of complex refractive index) n within a wavelength region of 390 nm to 420 nm and a refractive index n equal to or lower than 1.2 with respect to the laser beam having the wavelength of 390 to 420 nm into a ketone system solvent whose carbon number is 5 to 7, thereby preparing a coating solution, and applying the thus prepared coating solution onto the support substrate using a spin coating process to form a recording layer.

20. A method for manufacturing an optical recording disk in accordance with Claim 18,

wherein R in the general formula (1), at each occurrence, is independently selected from the group consisting of



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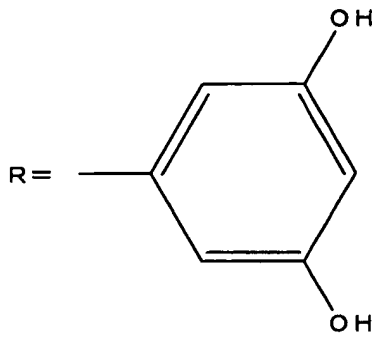

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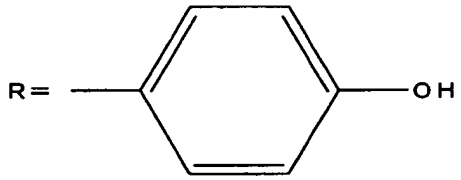

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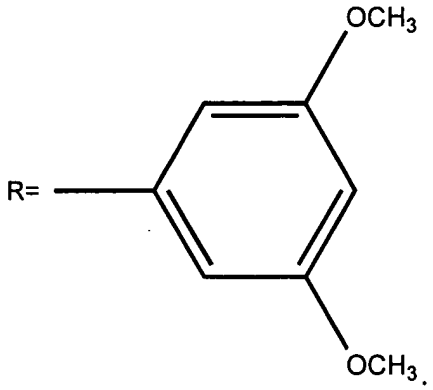
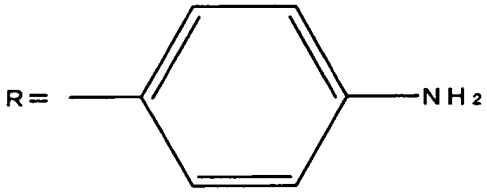


21. A method for manufacturing an optical recording disk in accordance with Claim 19, wherein R in the general formula (1), at each occurrence, is independently selected from the group consisting of



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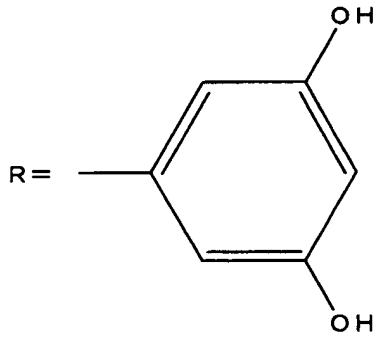

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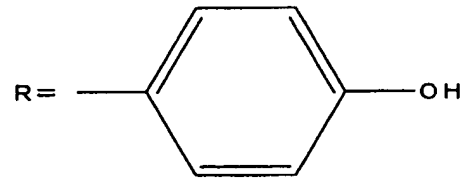

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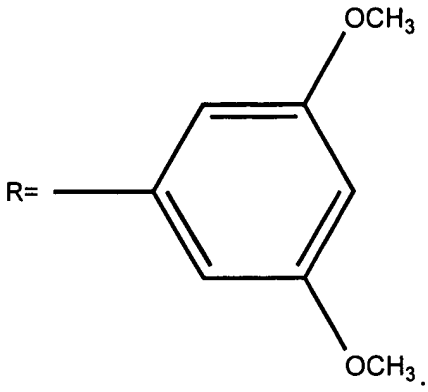


22. A method for manufacturing an optical recording disk in accordance with Claim 18, wherein the coating solution is prepared by dissolving the above identified porphyrin system dye into a ketone system solvent whose carbon number is 6.

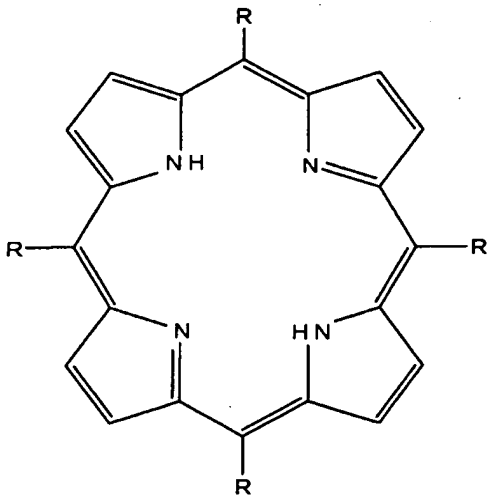
23. A method for manufacturing an optical recording disk in accordance with Claim 19, wherein the coating solution is prepared by dissolving the above identified porphyrin system dye into a ketone system solvent whose carbon number is 6.

24. A method for manufacturing an optical recording disk in accordance with Claim 18, wherein the recording layer is formed by applying the coating solution onto the support substrate formed of a polyolefin resin using a spin coating process.

25. A method for manufacturing an optical recording disk in accordance with Claim 19,

wherein the recording layer is formed by applying the coating solution onto the support substrate formed of a polyolefin resin using a spin coating process.

26. A method for recording and reproducing an optical recording disk including at least a recording layer containing an organic compound as a primary component and a light transmission layer which transmits a laser beam having a wavelength of 390 to 420 nm on a support substrate in this order, the organic compound containing a porphyrin system dye represented by general formula (1) as a primary component, the optical recording and reproducing method comprising steps of projecting a laser beam of a wavelength of 390 to 420 nm for recording data onto the recording layer via the light transmission layer, thereby recording data in the recording layer and increasing a refractive index *n* of the porphyrin system dye with respect to a laser beam of a wavelength of 390 to 420 nm for reproducing data, and projecting the laser beam of a wavelength of 390 to 420 nm for reproducing data onto the recording layer via the light transmission layer, thereby reproducing data recorded in the recording layer.



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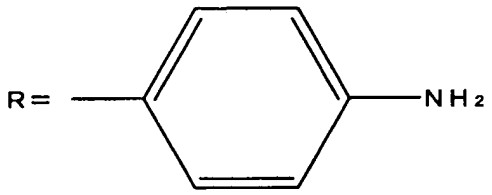
27. The optical recording and reproducing method for an optical recording disk in accordance with Claim 26, wherein the porphyrin system dye has a minimal value n_{min} of a refractive index (real part of complex refractive index) n within a wavelength region of 390 nm to 420 nm and a refractive index n equal to or lower than 1.2 with respect to the laser beam having the wavelength of 390 to 420 nm and has a property of absorbing the laser beam having the wavelength of 390 to 420 nm to be melted or decomposed, whereby the refractive index thereof changes.

28. The optical recording and reproducing method for an optical recording disk in accordance with Claim 26, wherein R in the general formula (1), at each occurrence, is independently selected from the group consisting of



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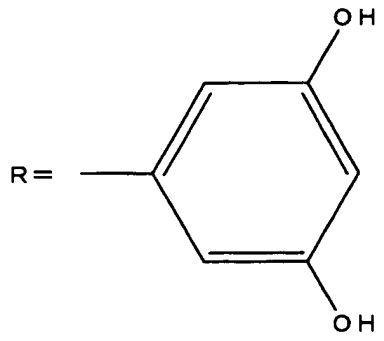

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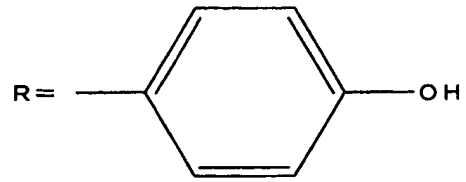

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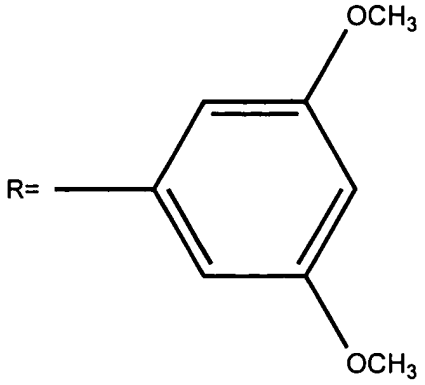
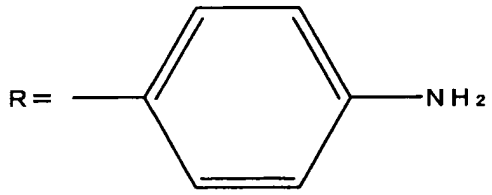


29. The optical recording and reproducing method for an optical recording disk in accordance with Claim 27, wherein R in the general formula (1), at each occurrence, is independently selected from the group consisting of



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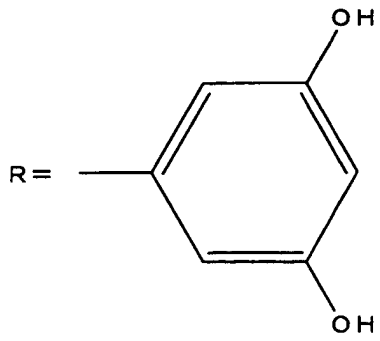

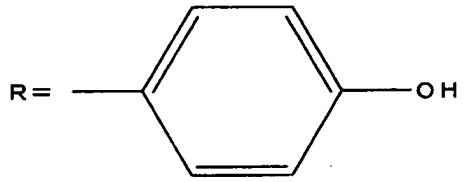

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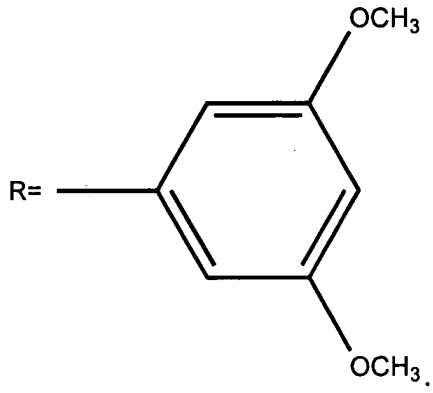


30. The optical recording and reproducing method for an optical recording disk in accordance with Claim 26, wherein the recording layer further contains a ketone system solvent whose carbon number is 5 to 7.

31. The optical recording and reproducing method for an optical recording disk in

accordance with Claim 27, wherein the recording layer further contains a ketone system solvent whose carbon number is 5 to 7.

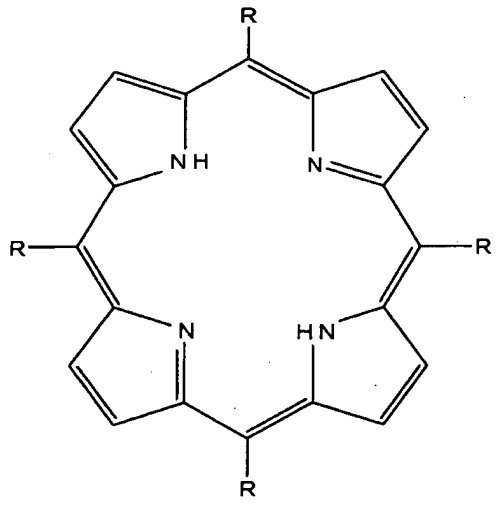
32. The optical recording and reproducing method for an optical recording disk in accordance with Claim 30, wherein the recording layer further contains a ketone system solvent whose carbon number is 6.

33. The optical recording and reproducing method for an optical recording disk in accordance with Claim 31, wherein the recording layer further contains a ketone system solvent whose carbon number is 6.

34. The optical recording and reproducing method for an optical recording disk in accordance with Claim 26, wherein the support substrate is formed of a polyolefin resin.

35. The optical recording and reproducing method for an optical recording disk in accordance with Claim 27, wherein the support substrate is formed of a polyolefin resin.

36. An optical recording disk comprising a recording layer containing an organic compound as a primary component, the organic compound containing a porphyrin system dye represented by general formula (1) as a primary component,



(1)

wherein R in the general formula (1), at each occurrence, is independently selected from the group consisting of

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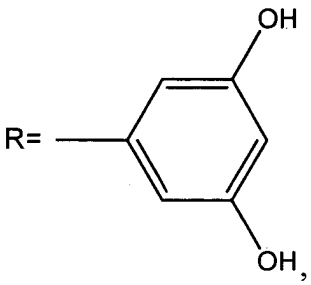

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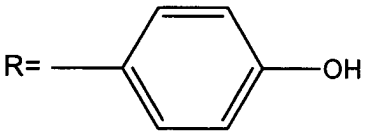

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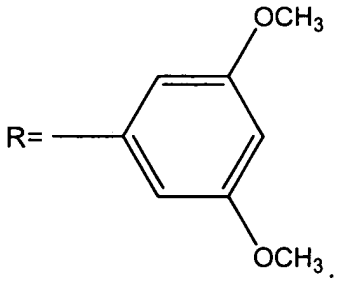
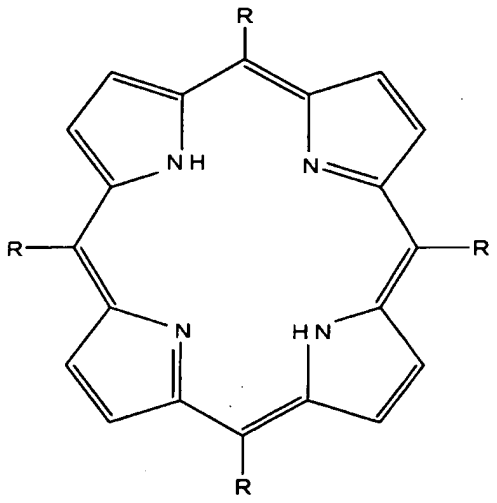


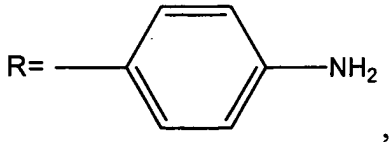
37. The optical recording disk of Claim 36 wherein each R of the porphyrin system dye is the same.

38. A method for manufacturing an optical recording disk comprising steps of dissolving a porphyrin system dye represented by general formula (1) into a ketone whose carbon number is 5 to 7 to prepare a coating solution, and applying the thus prepared coating solution onto a support substrate using a spin coating process to form a recording layer,



(1)

wherein R in the general formula (1), at each occurrence, is independently selected from the group consisting of



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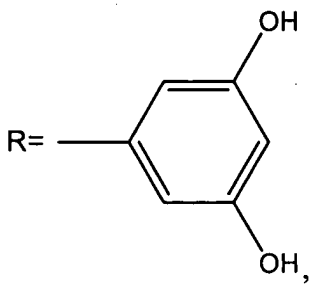

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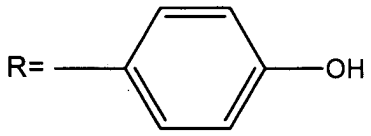

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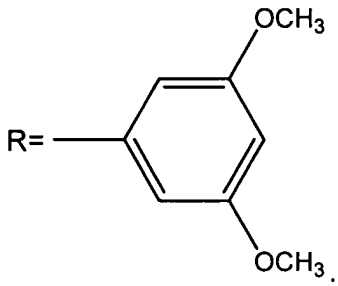

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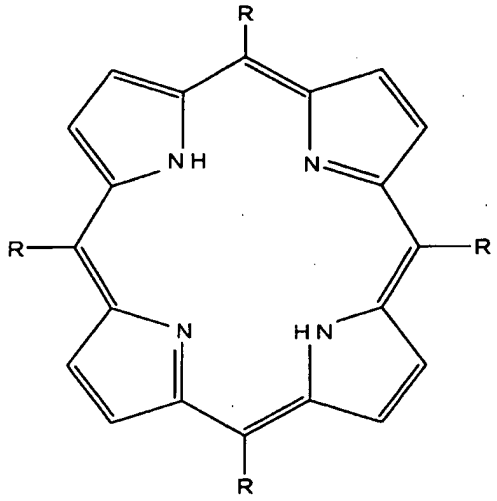
39. A method for recording and reproducing an optical recording disk including at least a recording layer containing an organic compound as a primary component and a light transmission layer which transmits a laser beam having a wavelength of 390 to 420 nm on a support substrate in this order, the organic compound containing a porphyrin system dye represented by general formula (1) as a primary component, the optical recording and reproducing method comprising steps of projecting a laser beam of a wavelength of 390 to 420 nm for recording data onto the recording layer via the light transmission layer, thereby recording data in the recording layer and increasing a refractive index *n* of the porphyrin system dye with respect to a laser beam of a wavelength of 390 to 420 nm for reproducing data,

and projecting the laser beam of a wavelength of 390 to 420 nm for reproducing data onto the recording layer via the light transmission layer, thereby reproducing data recorded in the recording layer,



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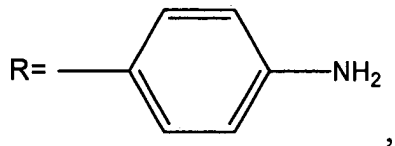
wherein R in the general formula (1), at each occurrence, is independently selected from the group consisting of



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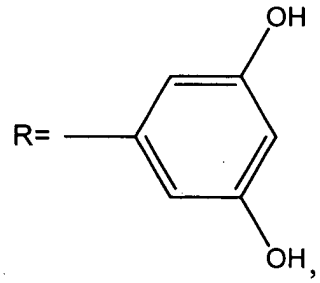

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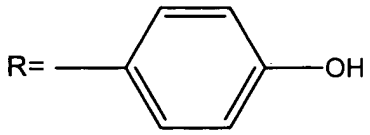

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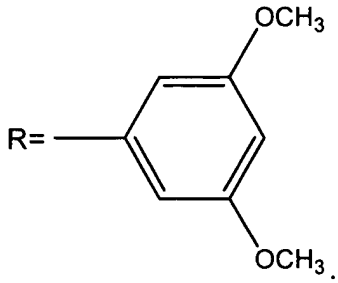

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